Notice of Allowability	Application No.	Applicant(s)	
	10/790,363	MCDERMOTT ET AL.	
	Examiner	Art Unit	
	Tuan T. Dinh	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *an interview on 12/0/07, and 01/17/08*.

2. ☒ The allowed claim(s) is/are *1-18,20,22-30,32-35,37,39,41-44,46,48-108,110,112-120,122-125,127,129,131-134,136,138-178*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *01/08* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Tuan T Dinh/
Primary Examiner, Art Unit 2841

DETAILED ACTION

Claims 1-90, and 180 are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Peter Trzyna (Reg. No. 32,601) on 12/20/07.

As discussed with Mr. Peter Trzyna during a telephone interview on 12/20/07, the amended claims appear to be unpatentable over the prior art as to 6,234,567; therefore, in order to place the application in condition for allowance applicant agrees to amend the claims by way of the examiner's amendment.

The application has been amended as follows:

Claim 3, line 1, change "The method" to - - The process - -.

1. (**Currently amended**) A process of making an electrical device, the process including:

producing a dielectric material comprised of a top surface with cavities remaining from removing a portion of the dielectric material; and

building up a conductive layer on the dielectric material to fill the cavities to form teeth set in and under the top surface of the dielectric material and form a portion of circuitry of the electrical device, wherein a plurality of the cavities are obtuse with respect to the top surface, and a plurality of the cavities are at least 1 tenth of a mil deep and less than 1.75 tenths of a mil deep, **and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

7. (**Currently amended**) A process of making an electrical device, the process including:

producing a dielectric material including cavities remaining from removing a portion of the dielectric material; and

building up a conductive layer on the dielectric material to fill the cavities to form a surface of substantially angular teeth set in the dielectric material and form a portion of circuitry of the electrical device, and wherein a sample of the circuitry has at least 20% of the teeth being at least 1 tenth of a mil deep and less than 1.75 tenths of a mil deep, **and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

12. (**Currently amended**) A process of making an electrical device, the process including:

building up a conductive layer of material on a layer of dielectric material, the layers joined in a saw-tooth manner made of both materials in an interlocking bite to form a portion of circuitry of the electrical device, the conductive layer comprised of teeth, and wherein

a sample of the circuitry has at least 5,000 of the teeth per linear inch, and the sample of the circuitry has at least 20% of the teeth being at least 1 tenth of a mil deep and less than 2 tenths of a mil deep, **and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

18. (**Currently amended**) A process of making an electrical device, the process including:

building up a conductive layer to fill undercuttings with respect to a surface of a dielectric material, a plurality of the undercuttings being obtuse to the surface and-in the

range of I tenth of a mil deep to 1.75 tenths of a mil deep, to form a portion of circuitry of the electrical device,

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

19. (**Canceled**).

20. (**Currently amended**) A process of making an electrical device, the process including:

producing a dielectric material with cavities remaining after removing an other portion of the dielectric material sufficient to produce a surface gloss measurement at an angle of 60 degrees of less than 10%; and

building up a conductive layer to fill the cavities and form electrical device circuitry; **wherein a plurality of the cavities is obtusely angled and the building up the conductive layer includes forming teeth in the range of I tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

21. (**Canceled**).

25. (**Currently amended**) A process for making an electrical device, the process including:

forming electrical device circuitry by building up a conductive layer on a dielectric material at a dielectric surface area greater than a dielectric surface area that would be produced by a single pass roughening, wherein a sample of the circuitry has at least 20% of the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, **and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

29. (**Currently amended**) A process of making an electrical device, the process including:

combining a dielectric material with a conductive layer to form a portion of circuitry of the electrical device, said combining being carried out with means for joining the conductive layer to the dielectric material,

the means including teeth built up on the dielectric material and angled sufficiently for mechanically gripping the dielectric material in three dimensions, **the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

30. (**Currently amended**) A process of making an electrical device, the process including:

combining a dielectric material with means for joining a conductive layer built up on the dielectric material to produce a peel strength greater than a peel strength that would be produced by a single desmear process, the conductive layer forming a portion of circuitry, **wherein**

the combining is carried out with the means for joining comprised of teeth, a plurality of the teeth being obtuse to a top surface of the dielectric material and at least one tenth are within a range of a mil deep to 1.75 of a mil deep, and

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

31. (**Canceled**).

32. (**Currently amended**) A process of making an electrical device, the process including:

forming electrical device circuitry by building up a conductive layer on a surface of dielectric material to produce a peel strength greater than a peel strength that would be produced by a single desmear process, wherein

a sample of the circuitry includes at least 20% of the teeth **that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

35. (**Currently amended**) A process of making an electrical device, the process including:

producing a dielectric material comprising a top surface remaining from removing a portion of the dielectric material; and applying means for mechanically gripping a conductive layer to the surface of the dielectric material so that a conductive layer is burrowed in and under the top surface of the dielectric material, wherein

the conductive layer forms a portion of circuitry of the electrical device, **wherein the applying is carried out with the means for mechanically gripping comprising teeth, and the teeth that are within the range of 1 tenth of a mil deep to 2 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

36. (**Canceled**).

37. (**Currently amended**) A process of making an electrical device, the process including:

forming electrical device circuitry by building up a conductive layer on a dielectric material sufficiently that separation would destroy integrity of the conductive layer and of the dielectric material, **wherein**

building up the conductive layer includes forming teeth, and the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

38. (**Canceled**).

39. (**Currently amended**) A process of making an electrical device, the process including:

building up a conductive layer on a dielectric material with a surface gloss measurement at an angle of 60 degrees of less than 10% to form circuitry of the electrical device, **wherein**

the building up the conductive layer includes producing teeth, and the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

40. (**Canceled**).

44. (**Currently amended**) A process of making an electrical device, the process including:

combining a dielectric material with means for joining a conductive layer built up on the dielectric material at a dielectric surface contact area greater than a dielectric surface contact area that would be produced by a single pass roughening,

the conductive layer forming a portion of circuitry, **wherein the combining is carried out with the means for joining comprised of teeth, and the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

45. (**Canceled**).

46. (**Currently amended**) A process of making an electrical device, the process including:

combining a dielectric material with means for joining a conductive layer built up on the dielectric material sufficiently that separation requires destroying integrity of at least one of the conductive layer and the dielectric material,

said means for joining comprising filled cavities that form a portion of circuitry of the electrical device, **wherein the combining is carried out with the filled cavities comprising teeth**, **the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

47. (**Canceled**).

48. (**Currently amended**) The process of any one of claims ~~1, 7, 11, 19, 21, 25, 29, 31 32, 36, 38, 44, or 46~~ **1, 7, 11, 18, 20, 25, 29, 30, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 5,000 said teeth per linear inch.

49. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31 32, 36, 38, 44, or 46~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 10,000 said teeth per linear inch.

50. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31,~~

~~32, 36, 38, 45, or 46~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 15,000 said teeth per linear inch.

51. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 25,000 said teeth per square inch.

52. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 100,000 said teeth per square inch.

53. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 200,000 said teeth per square inch.

54. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 20% of the teeth are shaped to mechanically grip the dielectric material.

55. (**Currently amended**) The process of any one of claims ~~1, 12, 19, 21, 29, 31, 36, 38, 45, or 47~~ **1, 12, 18, 20, 29, 30, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 50% of the teeth that are obtuse shaped.

56. (**Currently amended**) The process of any one of claims ~~1, 12, 17, 19, 21, 29, 31, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 20% of the teeth that are within the range of at least 1 tenth of a mil deep to 1.75 tenths of a mil deep.

57. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 50% of the teeth that are within the range of at least 1 tenth of a mil deep to 1.75 tenths of a mil deep.

58. (**Currently amended**) The process of any one of claims ~~1, 3, 7, 12, 17, 19, 21, 29, 31, 36, 38, 45, or 47~~ **1, 3, 7, 12, 18, 20, 29, 30, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 20% of the teeth that are within the range of 1 tenth of a mil deep to 1.5 tenths of a mil deep.

59. (**Currently amended**) The process of any one of claims 1~~, 2, 3, 7, 12, 17, 19, 21, 31, 36, 38, 45, or 47~~ **1, 2, 3, 7, 12, 18, 20, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 50% of the teeth that are within the range of 1 tenth of a mil deep to 1.5 tenths of a mil deep.

60. (**Currently amended**) The process of any one of claims ~~1, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 20% of the teeth that are in the range of 1.5 tenths of a mil deep to 1.75 tenths of a mil deep.

61. (**Currently amended**) The process of any one of claims 1~~, 7, 12, 19, 21, 25, 29, 31, 32, 36, 38, 45, or 47~~ **1, 7, 12, 18, 20, 25, 29, 30, 32, 35, 37, 44, or 46** wherein: a sample of the circuitry includes at least 50% of the teeth that are in the range of 1.5 tenths of a mil deep to 1.75 tenths of a mil deep.

91. (Currently amended) An electrical device including:

a dielectric material having a top surface with cavities remaining from removal of a portion of the dielectric material;

a conductive layer built up on the dielectric material to fill the cavities to form teeth set in and under the top surface of the dielectric material; and wherein:

the conductive layer is a portion of circuitry of the electrical device, and a plurality of the cavities are obtuse with respect to the top surface and are at least 1 tenth of a mil deep **to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

97. (Twice-Currently amended) An electrical device including:

a dielectric material having cavities remaining from removal of a portion of the dielectric material;

a conductive layer built up on the dielectric material to fill the cavities to form a surface of substantially angular teeth set in the dielectric material; and wherein:

the conductive layer is a portion of circuitry of the electrical device, and a plurality of the teeth being are at least 1 tenth of a mil deep and less than 1.75 tenths of a mil deep ,**and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

102. (**Currently amended**) An electrical device including:

a conductive layer of material built up on a layer of a dielectric material, the layers joined in a saw-tooth manner made of both materials in an interlocking bite; wherein

the conductive layer is a portion of circuitry of the electrical device, the conductive layer is comprised of teeth, and a sample of the circuitry has at least 5,000 of the teeth per linear inch, **the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

108. (**Currently amended**) An electrical device including:

a conductive layer including a surface built up to fill undercuttings in a dielectric material, a plurality of the undercuttings being obtuse to the surface and at least 1.5 tenths of a mil deep, wherein

the conductive layer is a portion of circuitry of the electrical device, **wherein the conductive layer built up to fill the undercuttings is comprised of teeth**, **the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

109 (**canceled**).

110. (**Currently amended**) An electrical device including:

a dielectric material with cavities remaining after removal of a portion of the dielectric material sufficient to produce a surface gloss measurement at an angle of 60 degrees of less than 10%; and

electrical device circuitry comprised of a conductive layer built up to fill the cavities, **a plurality of the cavities are obtusely angled, and the conductive layer built up to fill the cavities is comprised of teeth**, **the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

111. (**Canceled**).

115. (**Twice-Currently amended**) An electrical device including:

a dielectric material; and

electrical device circuitry comprising a conductive layer built up on the dielectric material at a dielectric surface area greater than a dielectric surface area that would be produced by a single pass roughening; and wherein

plurality of the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, **and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

119. (**Currently amended**) An electrical device including:

a dielectric material;

a conductive layer forming a portion of circuitry of the electrical device; and

means for joining the conductive layer to the dielectric material, the means including teeth built up on the dielectric material and angled sufficiently for mechanically gripping the dielectric material in three dimensions, **the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

120. (Currently amended) An electrical device including:

a dielectric material; and

means for joining a conductive layer built up on the dielectric material to produce a peel strength greater than a peel strength that would be produced by a single desmear process, wherein the conductive layer is a portion of circuitry, and portions of the conductive layer are obtuse to a top surface of the dielectric material and at least 1 tenth of a mil deep, **wherein the means for joining is comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

121. (**Canceled**).

122. (Currently amended) An electrical device including:

a dielectric material; and

electrical device circuitry comprising a conductive layer built up on a surface of the dielectric material to produce a peel strength greater than a peel strength that would be produced by a single desmear process; and wherein

plurality of the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and **wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope**.

125. (**Currently amended**) An electrical device including:

a dielectric material having a top surface with a surface remaining from removal of a portion of the dielectric material; and

means for mechanically gripping a conductive layer to the surface of the dielectric material so that the conductive layer is burrowed in and under the top surface of the dielectric material, wherein the conductive layer forms a portion of circuitry of the electrical device, **wherein the means for mechanically gripping is comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

126. (**Canceled**).

127. (**Currently amended**) An electrical device including:

a dielectric material; and

electrical device circuitry comprising a conductive layer built up on the dielectric material sufficiently that separation would require destroying integrity of the conductive layer and of the dielectric material, **wherein the conductive layer is comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

128. (**Canceled**).

129. (**Currently amended**) An electrical device including:

a dielectric material having a surface gloss measurement at an angle of 60 degrees of less than 10%; and

circuitry of the electrical device comprised of a conductive layer on the dielectric material, **wherein the conductive layer is comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

130. (**Canceled**).

134. (Previously presented) An electrical device including:

a dielectric material; and

means for joining a conductive layer built up on the dielectric material at a dielectric surface contact area greater than a dielectric surface contact area that would be produced by a single pass roughening, wherein the conductive layer is a portion of circuitry of the electrical device, **wherein the means for joining comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

135. (**Canceled**).

136. (**Currently amended**) An electrical device including:

a dielectric material; and

means for joining a conductive layer built up on the dielectric material sufficiently that separation requires destroying integrity of at least one of the conductive layer and the dielectric material, said means for joining comprising filled cavities that form a portion of circuitry of the electrical device, **wherein the filled cavities comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and**

wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope.

137. (**Canceled**).

138. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 101, 109, 111, 115, 119, 121 122, 126, 128,130,135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 5,000 said teeth per linear inch.

139. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111,115, 119, 121 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 10,000 said teeth per linear inch.

140. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111,115, 119, 121 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120,**

122, 125, 127, 129, 134, or 136 wherein: a sample of the circuitry has at least 15,000 said teeth per linear inch.

141. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111, 115, 119, 121 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 25,000 said teeth per square inch.

142. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111, 115, 119, 121 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** whereto: a sample of the circuitry has at least 100,000 said teeth per square inch.

143. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111,115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** whereto: a sample of the circuitry has at least 200,000 said teeth per square inch.

144. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111,115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 20% of the teeth have a shape that mechanically grips the dielectric material.

145. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111,115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 50% of the teeth structured obtusely with respect to a line within a plane defined by a surface

of the dielectric material that was removed.

146. (**Twice-Currently amended**) The device of any one of claims ~~91, 97,102, 107, 109, 111,115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 20% of the teeth that are at least 1 tenth of a mil deep.

147. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111, 115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 50% of the teeth that are at least 1 tenth of a mil deep.

148. (**Twice-Currently amended**) The device of any one of claims ~~91, 97,.98, 102, 109, 111,115, 119, 121, 122,126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 20% of the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep.

149. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 98, 102, 107, 109, 111, 115,119, 121, 122, 123, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 50% of the teeth that are within the range of 1 tenth of a mil deep to 2 tenths of a mil deep.

150. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111, 115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 20% of the teeth that are in the range of 1.5 tenths of a mil deep to 1.75 tenths of a mil deep.

151. (**Twice-Currently amended**) The device of any one of claims ~~91, 97, 102, 109, 111, 115, 119, 121, 122, 126, 128, 130, 135, or 137~~ **91, 97, 101, 108, 110, 115, 119, 120, 122, 125, 127, 129, 134, or 136** wherein: a sample of the circuitry has at least 50% of the teeth that are in the range of 1.5 tenths of a mil deep to 1.75 tenths of a rail deep.

~~154~~ **152. (Currently Amended)** The device of claim 140, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~155~~ **153. (Currently Amended)** The device of claim 141, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~156~~ **154. (Currently Amended)** The device of claim 142, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~157~~ **155. (Currently Amended)** The device of claim 143, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~158~~ **156. (Currently Amended)** The device of claim 144, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~159~~ **157. (Currently Amended)** The device of claim 145, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said

teeth and another of said layers comprising corresponding teeth.

~~160~~ **158. (Currently Amended)** The device of claim 146, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~161~~ **159. (Currently Amended)** The device of claim 147, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~162~~ **160. (Currently Amended)**) The device of claim 148, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~163~~ **161. (Currently Amended)** The device of claim 149, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~164~~ **162. (Currently Amended)** The device of claim 150, wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~165~~ **163. (Currently Amended)** The device of claim 151 wherein the circuitry of the electrical device is comprised of multi-layer circuitry, one of said layers comprising said teeth and another of said layers comprising corresponding teeth.

~~166~~ **164. (Currently Amended)** The device of claim 138, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~167~~ **165. (Currently Amended)** The device of claim 139, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~168~~ **166. (Currently Amended)** The device of claim 140, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~169~~ **167. (Currently Amended)** The device of claim 141, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side compris0ng corresponding teeth.

~~170~~ **168. (Currently Amended)** The device of claim 142, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~171~~ **169. (Currently Amended)** The device of claim 143, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~172~~ **170. (Currently Amended)** The device of claim 144, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~173~~ **171. (Currently Amended)** The device of claim 145, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~174~~ **172. (Currently Amended)** The device of claim 146, wherein the circuitry is

comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~175~~ **173. (Currently Amended)** The device of claim 147, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~176~~ **174. (Currently Amended)** The device of claim 148, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~177~~ **175. (Currently Amended)** The device of claim 149, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~178~~ **176. (Currently Amended)** The device of claim 150, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~179~~ **177. (Currently Amended)** The device of claim 151, wherein the circuitry is comprised of double sided circuitry, one side comprising said teeth and another side comprising corresponding teeth.

~~180~~ **178. (Currently Amended)** A process of making the electrical device product of any one of claims 91, 97, 102, 108, 110, 115, 119, 120, 122, 125, 129, 134, or 136, the method including: forming means for joining by building up a conductive layer on a dielectric material surface remaining from removal of a portion of the dielectric material to form a portion of circuitry in the electrical device.

Allowable Subject Matter

2. Claims 1-18, 20, 22-30, 32-35, 37, 39, 41-44, 46, 48-108, 110, 112-120, 122, 124-125, 127, 129, 131-134, 136, 138-178 are allowed.

The following is an examiner's statement of reasons for allowance: neither the references cited nor the cited references teach, suggest, or in combination of an electronic device and its process having **the conductive layer, the filled cavities, or means for joining comprised of teeth, the teeth that are within the range of 1 tenth of a mil deep to 1.75 tenths of a mil deep, and wherein at least one of the cavities includes an upgrade slope with respect to the surface of the dielectric material, and one of the teeth engages a portion of the dielectric material at the slope**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gutierrez F. Diego can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tuan Dinh
January 22, 2008.

/Tuan T Dinh/
Primary Examiner, Art Unit 2841

TUAN T. DINH
PRIMARY EXAMINER
1/22/08